

Appl. No. 10/666,288
Amdt dated April 3, 2006
Reply to Office Action of Nov. 2, 2005

Amendments to the Claims:

This listing of the claims will replace all prior versions and listings in the application.

Listing of Claims:

1. (Withdrawn) A surgical device for cutting material and monitoring pressure comprising:

an elongate member having a distal region and a proximal region;

an energy delivery device associated with the elongate member at the distal region for delivering cutting energy to the material, said energy delivery device adapted for connection to an energy source; and

a pressure sensing mechanism associated with the distal region for monitoring pressure about the distal region.

2. (Withdrawn) The device as claimed in claim 1 wherein the cutting energy is at least one form of energy selected from a group consisting of: electrical current; microwave; ultrasound; and laser.

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3. (Withdrawn) The device as claimed in claim 2 wherein the electrical current has a frequency within the radio frequency range.
4. (Withdrawn) The device as claimed in claim 1 wherein the material comprises cellular tissue and wherein the energy delivery device is operable to deliver sufficient energy to the tissue to result in a rapid increase in the intracellular temperature causing vaporization of intracellular water and subsequent cell lysis.
5. (Withdrawn) The device as claimed in claim 1 wherein the pressure sensing mechanism comprises a pressure transmitting lumen extending between the proximal and distal regions, said lumen at the proximal region being adapted for fluid communication with a pressure transducer that provides a signal which varies as a function of pressure and adapted at the distal region for fluid communication with an environment about said distal region.
6. (Withdrawn) The device as claimed in claim 5 wherein the distal region comprises at least one opening to the environment and wherein the lumen is in fluid communication with the at least one opening.
7. (Withdrawn) The device as claimed in claim 6 wherein the lumen is adapted for injecting a fluid through the at least one opening.

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8. (Withdrawn) The device as claimed in claim 5 wherein the distal region comprises multiple openings to the environment and wherein the lumen is in fluid communication with the multiple openings.
9. (Withdrawn) The device as claimed in claim 8 wherein at least some of the multiple openings are located distally and some of the multiple openings are located proximally with respect to each other and wherein the some of the openings located distally are larger than the some of the openings located proximally.
10. (Withdrawn) The device as claimed in claim 8 wherein the lumen is adapted for injecting a fluid through the multiple openings.
11. (Withdrawn) The device as claimed in claim 1 wherein the pressure sensing mechanism comprises a pressure transducer on-board the elongate member, said transducer being adapted for communication with a pressure monitoring system.
12. (Withdrawn) The device as claimed in claim 1 wherein the energy delivery device comprises a functional tip with at least one active electrode.
13. (Withdrawn) The device as claimed in claim 1 wherein the energy delivery device comprises a functional tip having two or more electrodes.

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14. (Withdrawn) The device as claimed in claim 13 wherein the electrodes are configured in an arrangement where at least one of the electrodes is active and at least one is a return electrode.
15. (Withdrawn) The device as claimed in claim 1 comprising at least one depth marking.
16. (Withdrawn) The device as claimed in claim 1 comprising at least one radiopaque marker.
17. (Withdrawn) The device as claimed in claim 1 comprising a radiopaque distal region.
18. (Currently Amended) A method of method for creating a channel through a material located in a body of a patient, said body having a body vasculature, said method using a surgical device comprising a substantially elongated member, said elongated member defining a proximal region and a longitudinally opposed distal region, said surgical device also comprising an energy delivery device for delivering energy to said material, said energy delivery device being operatively coupled to said elongated member substantially adjacent said distal region ~~surgical perforation comprising the steps of, said method comprising:~~
- (i) ~~introducing said surgical the surgical device into said body of said patient the body of the patient, the surgical device comprising an elongate~~

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~~member having a distal region and a proximal, an energy delivery device proximate to the distal region capable of perforating material and a pressure sensing mechanism for determining pressure in the body proximate to the distal region;~~

~~(ii) positioning said energy the energy delivery device to at a first desired location in said body of said patient the patient's body, said first desired location being substantially adjacent said material to be perforated;~~

~~(iii) energizing said energy delivery device, and~~

~~(iv) using the energized energy delivery device to create said channel through said material by delivering energy into said material delivering energy using the energy delivery device to perforate said material; and~~

~~(iv) measuring pressure in the body using the pressure sensing mechanism in order to determine the position of the surgical device at least one of before and after step (iii).~~

19. (Currently Amended) The method as claimed in claim 18 wherein ~~step (ii)~~ positioning said energy delivery device comprises staining a region of ~~tissue~~ said material substantially adjacent said first desired location in the first desired location in

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~~the patient's body and monitoring under fluoroscopy the position of said surgical device~~
~~relatively to said region of said material.~~

20. (Currently Amended) The method as claimed in claim 18 further comprising a
step of:

(v) advancing the device said energy delivery device through said
channel and out of said material to a second desired location.

21. (Currently Amended) The method as claimed in claim 20 wherein the surgical
said surgical device comprises at least one depth marking and at least one radiopaque
marker and wherein advancing said energy delivery device step (v) comprises
monitoring said at least one of said depth marking markings and said at least one of
said radiopaque marker markers.

22. (Currently Amended) The method as claimed in claim 20, wherein said surgical
device further includes a pressure sensor operatively coupled to said elongated
member for determining pressure in said body of said patient substantially adjacent said
distal region, said method further comprising a step of:

(vi) measuring pressure substantially adjacent said second location
using the using said pressure sensor at the second location.

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23. (Currently Amended) The method as claimed in claim 22 wherein said surgical ~~the surgical device~~ comprises at least one depth marking and at least one radiopaque marker and wherein ~~step (vi)~~ measuring pressure substantially adjacent said second location is performed after confirming the position of said pressure ~~the pressure sensing mechanism at said second location by monitoring under fluoroscopy at the second location using~~ at least one of said depth marking markings and said radiopaque marker markers.
24. (Currently Amended) The method as claimed in claim 18 wherein ~~step (i)~~ introducing said surgical device into said body of said patient comprises introducing said surgical device ~~the device~~ into said body vasculature ~~the patient's vasculature~~.
25. (Currently amended) The method as claimed in claim 24 wherein ~~the step of~~ introducing said surgical device into said body of said patient ~~the device into the patient's vasculature~~ comprises inserting said surgical device ~~the device~~ into a dilator and a guiding sheath positioned in said body vasculature ~~the patient's vasculature~~.
26. (Currently Amended) The method as claimed in claim 25 wherein said surgical device includes a device radiopaque marking ~~the device and at least one of said dilator and said sheath includes an auxiliary radiopaque marking, the dilator and sheath comprise a radiopaque marking and wherein step (ii)~~ positioning said energy delivery device comprises aligning said device radiopaque marking and said auxiliary

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~~radiopaque marking comprises aligning the radiopaque markings to aid in positioning the device.~~

27. (Currently Amended) The method as claimed in claim 25 further comprising a step of:

(v) maintaining said surgical device substantially fixed relatively to said material and advancing said dilator and said sheath over said surgical device ~~advancing the dilator and the sheath into the second location together over the spatially fixed surgical device.~~

28. (Currently Amended) The method as claimed in claim 25 further comprising a step of:

(v) advancing substantially jointly said dilator, said sheath and said surgical device towards said second location ~~the dilator, sheath and surgical device all together into the second location.~~

29. (Currently Amended) The method as claimed in claim 18 wherein said material includes a cardiac tissue ~~the material is tissue.~~

30. (Currently Amended) The method as claimed in claim 19 wherein said region of said material includes the region of tissue to be stained ~~is a fossa ovalis of a heart.~~

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31. (Currently Amended) The method as claimed in claim 22 wherein said pressure measured substantially adjacent said second location ~~the pressure measured at the second location is the~~ is a blood pressure.

32. (Withdrawn) An electrosurgical device comprising:

a elongate member having a distal region and a proximal region, said distal region insertable within and along a lumen within a body of a patient and maneuverable therethrough to a desired location where the device is operated to cut material and monitor pressure at the desired location;

at least one electrode associated with the distal region for cutting tissue, said at least one electrode adapted for coupling to an electrical power source; and

a pressure sensing mechanism associated with the distal region for sensing pressure at the desired location within the body, said mechanism adapted for coupling to a pressure monitoring system.

33. (Withdrawn) The device as claimed in claim 32 wherein the pressure sensing mechanism is configured to minimize a portion of the elongate member that is necessary to be located at the desired location to monitor pressure.

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34. (Withdrawn) The device as claimed in claim 32 wherein the pressure sensing mechanism comprises a pressure transmitting lumen defined within the elongate member extending from the proximal region to and through at least one opening defined in the distal region.

35. (Withdrawn) The device as claimed in claim 34 wherein said proximal region is adapted for coupling said pressure transmitting lumen to a pressure transducer associated with the pressure monitoring system.

36. (Withdrawn) The device as claimed in claim 34 wherein the pressure transmitting lumen is adapted for at least one of injecting a fluid to or removing a fluid from said body.

37. (Withdrawn) The device as claimed in claim 34 wherein the at least one electrode is coupled to said energy source by a coupling means extending through said pressure transmitting lumen.

38. (Withdrawn) The device as claimed in claim 32 wherein said pressure sensing mechanism comprises an on-board pressure transducer adapted for communicating a transduced pressure signal representative of pressure about the distal region to said pressure monitoring system.

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39. (Withdrawn) The device as claimed in claim 32 wherein the at least one electrode defines a functional tip comprising a conductive and radiopaque material at said distal region.
40. (Withdrawn) The device as claimed in claim 39 wherein the electrical power source is capable of providing a high-frequency electrical power to said functional tip in a high impedance range.
41. (Withdrawn) The device as claimed in claim 32 wherein the proximal region is adapted to releasably couple said pressure sensing mechanism to said pressure monitoring system.
42. (Withdrawn) The device as claimed in claim 32 wherein the proximal region is adapted to releasably couple said electrode to said electrical power source.
43. (Withdrawn) A surgical device comprising:
- means for cutting material at a desired location in a body of a patient; and
- means for determining a position of the device responsive to pressure within the body.
44. (Withdrawn) The device as claimed in claim 43 comprising a flexible elongate member having a proximal region and a distal region, said distal region adapted for insertion within and along a lumen within the body and maneuverable therethrough to

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the desired location; and wherein said means for determining a position of the device is operable to determine the position of the distal region.

45. (Withdrawn) The device as claimed in claim 43 wherein the means for determining a position of the device comprises a pressure transducer for providing a signal representative of pressure to a pressure monitoring system.

46. (Withdrawn) The device as claimed in claim 45 wherein the means for determining a position of the device comprises a pressure transmitting lumen defined by the device for coupling to the pressure transducer.

47. (Withdrawn) The device as claimed in claim 46 comprising a means for injecting fluid to and removing fluid from the body.

48. (Withdrawn) A method of cutting tissue at a desired location in a body of a patient comprising the steps of:

inserting a surgical device into the body, said surgical device comprising means for cutting material and means for determining a position of the device responsive to pressure within the body; and

positioning said surgical device at the desired location in response to the means for determining a position of the device.

49. (Withdrawn) The method as claimed in claim 48 comprising the step of:

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cutting material at the desired location.

50. (Withdrawn) The method as claimed in claim 49 comprising the step of:

advancing said device in the body in response to said means for determining a position of the device.

51. (Withdrawn) The method as claimed in claim 50 comprising re-positioning said device for re-cutting in response to said means for determining a position of the device.

52. (New) The method as claimed in claim 18, wherein delivering energy comprises delivering radio-frequency energy.

53. (New) The method as claimed in claim 52, wherein said material comprises cellular tissue and wherein delivering energy heats said cellular tissue so as to vaporize intracellular water and cause a subsequent cell lysis.

54. (New) The method as claimed in claim 18, wherein said material is selected from the group consisting of plaque and thrombotic occlusions.

55. (New) The method as claimed in claim 18, wherein said proximal region includes a proximal region material and distal region includes a distal region material, said distal region material being substantially softer than said proximal region material.